

## IMPLANTABLE CARDIAC STIMULATING DEVICE WITH OPTIMIZED DEMAND

### Abstract of the Disclosure

5 It is important in cardiac pacing devices and systems to achieve efficient power utilization and conservation to extend the life of the battery cells, thereby extending the intervals between invasive medical procedures to replace components in the cardiac 10 pacing system. A device and method are provided. The cardiac pacing device comprises a battery, a discrete time switched capacitor pacing power supply comprising a charge transfer capacitor bank comprising at least two capacitors, and a pace output supply capacitor which can discharge current to the tissue of a patient. A pacing supply design has a multiplicity of battery voltage multiplication factors and operating frequency settings. The pacing supply, voltage multiplier settings and operating 15 frequency are automatically adjusted to compensate for changing pace output settings, load, cardiac cycle rate, and/or battery condition. The pacing supply voltage multiplier setting and frequency are varied over the useful life of the battery so that on average, from a beginning of life period for the battery to an end of life period for the battery, the voltage multiplier and the switching frequency increase. In the pacing device, the voltage multiplier and the switching frequency rate is determined by a reading of the 20 rate of charging or charge time of a storage capacitor with said pacing device.

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